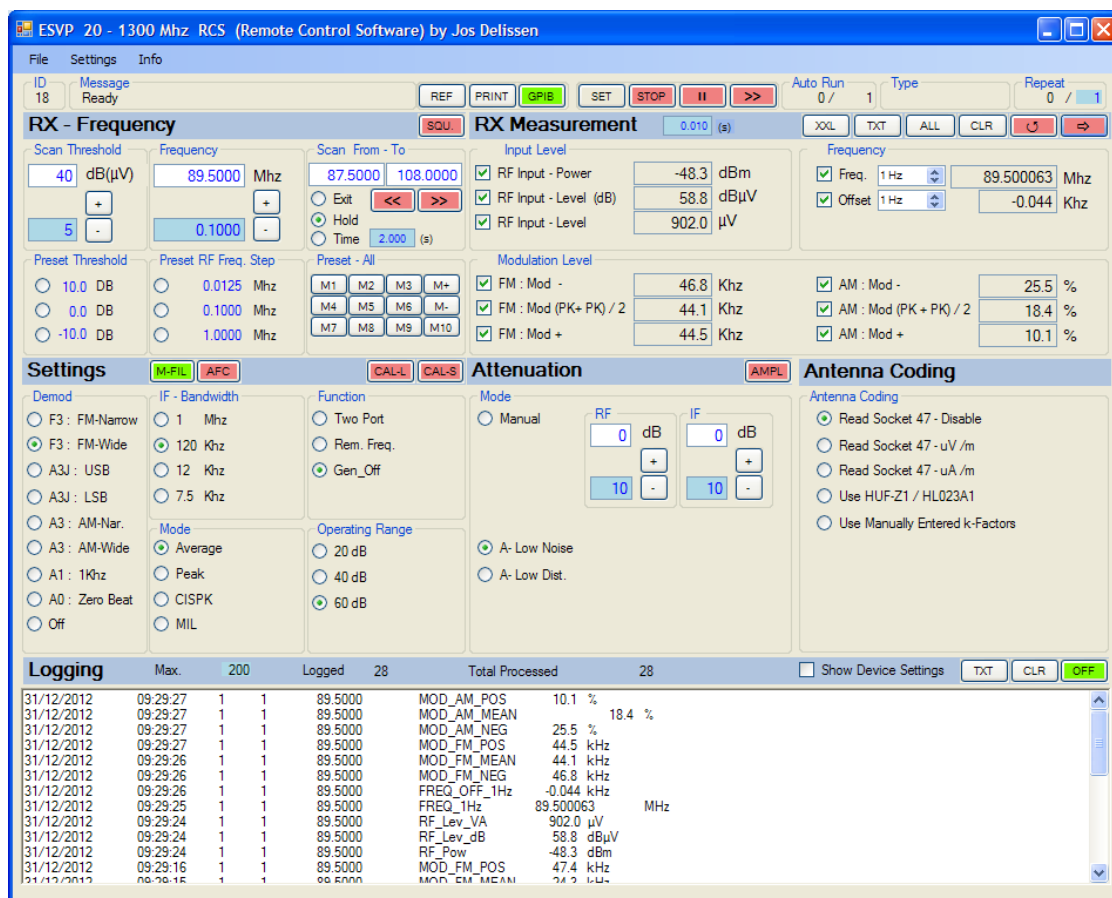


USER MANUAL V1.1

ESVP / ESH3 RCS (Remote Control Software)



**A simple tool for complex
Rohde & Schwarz Test Receivers**

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2. Introduction

The ESVP/ESH3 Remote Control Software (RCS) is designed to easily control the ESVP (20..1300 Mhz) and ESH3 (0.009 .. 29.9999Mhz) high end test receivers from Rohde & Schwarz.

Using software to control these receivers enables

- Usage of these receivers in computer controlled test systems
- Easy graphical user interface instead of “key driven” complex measuring special functions
- Enhanced frequency scanning possibilities. Exit/Hold and Time driven.
- Display measured data in Excel or download tot .txt file.
- Easy setup and running of multiple measurements within a frequency range.

Another advantage is that there is no need for additional programming (e.g. Matlab etc). It is a ready to use program.

Its functionality is split in two parts. With its standard functionality you are able to check if the software is suitable to operate on your computer / OS / GPIB installation. If it works fine you may consider making a registration request to get access to the enhanced functionality.

Standard functionality

- Operating the main receiver settings, such as
 - * RF Frequency, IF Bandwidth and demodulation mode
 - * Level Modes (AV, PEAK, CISPR and MIL)
 - * Threshold, Attenuation level, Operating range and Function mode

Enhanced functionality (subject to registration)

- Making use of the available measurements like
 - * Measurement of voltage (in dBm, dBμV or μV)
 - * Frequency and frequency-offset measurements
 - * Modulation depth and frequency deviation
 - * Field strength, current and spectral density
- Making use of the scanning functionality, including the ability to preset 10 device settings & scanning ranges

3. How to get it & Installation

The ESVP/ESH3 RCS is a Click Once application. Simply stated, a ClickOnce application is any Windows Forms or console application published using the Microsoft ClickOnce technology. ClickOnce applications can be deployed to a computer from a Web location, a network share, or even from a file location such as a CD.

ClickOnce-deployed applications are considered 'low impact', in that they are installed per-user, not per-machine. The application is added to the user's Start menu and to the Add/Remove Programs group in the Control Panel. Unlike other deployment technologies, nothing is added to the Program Files folder and no administrative rights are required for installation.

The ESVP/ESH3 RCS can be downloaded or launched from the site:

<http://www.30dbm.com>

The application requires needs .NET Framework. If the proper version is not available on the target system, it will automatically ask to download it during installation.

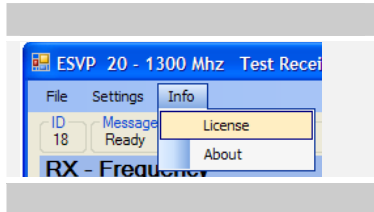
For using the enhanced functionality of ESVP/ESH3 RCS you need to be a registered user. A license key can be requested from:

<http://www.30dbm.com/Request.aspx>

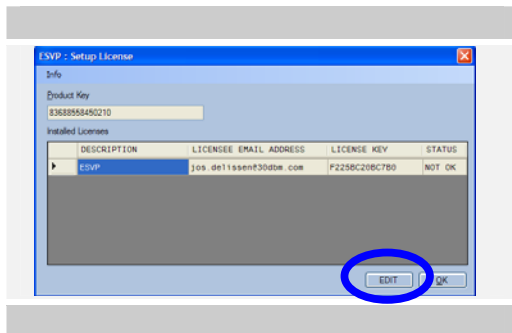
Please make sure to enter the correct equipment used

4. License agreement & Set up

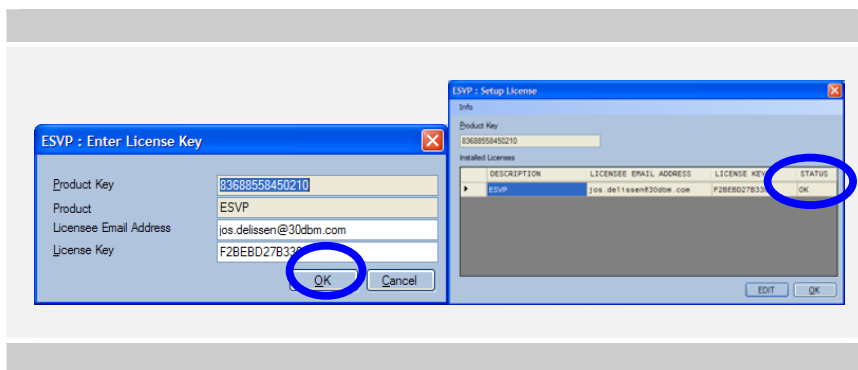
The ESVP/ESH3 RCS is license protected. To enter a license key



To enter the license key, select the corresponding module and push on "EDIT".

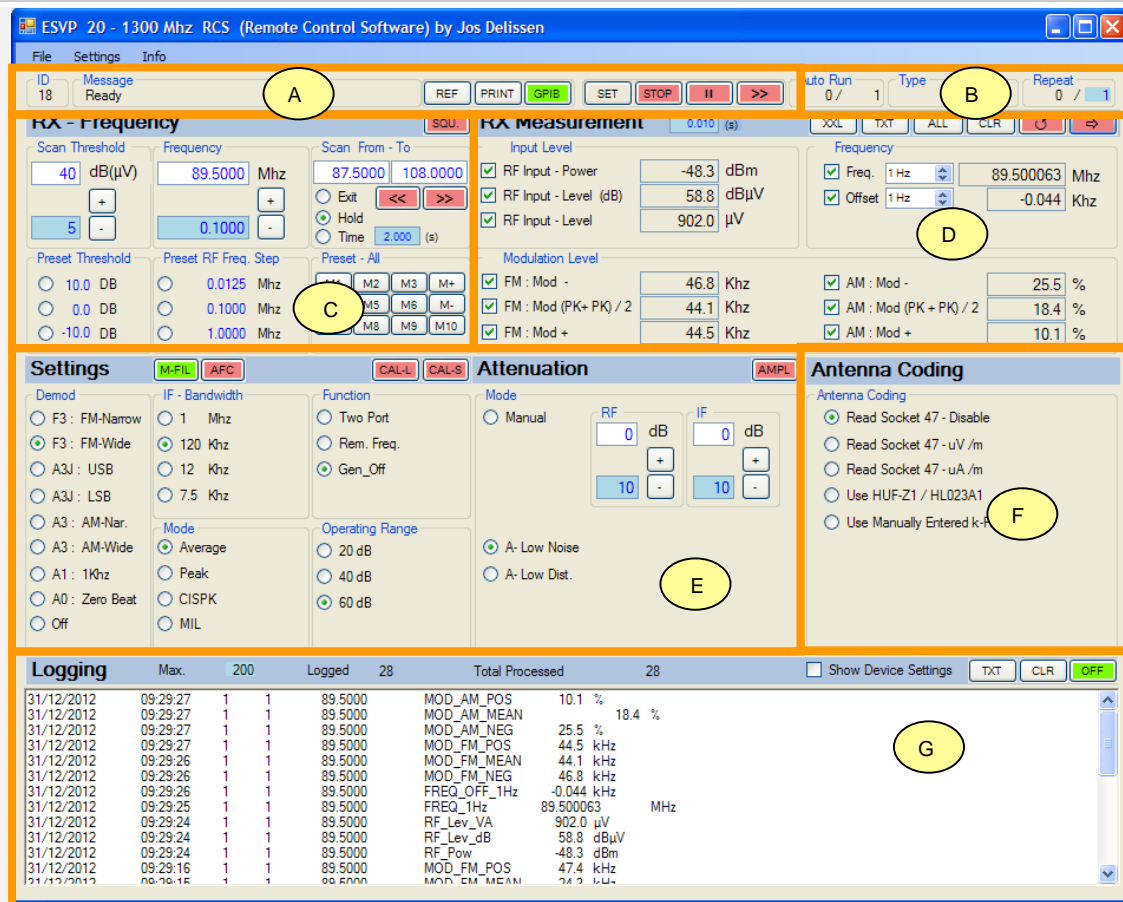


Now the license key can easily be added to your licenses setup, and it will immediately be reflected in the license overview.



5. Using the ESVP/ESH3 RCS

5.1. Screen overview



- A General menu section, main functions to start tool (GPIB) and setup automatic runs
- B Information bar about progress of measurements runs.
- C Main cockpit for frequency setup and scanning (with 10 memory functions which also store the device setup (see D))
- D Selection and display of measurements
- E Device setup, including modulation, attenuation.
- F Antenna Coding, triggering other measurement like field strength measurements
- G Logging section, possibility to display all read values sequentially

5.2. General menu section

The screenshot displays the software's main interface. At the top, there is a menu bar with 'File', 'Settings', and 'Info'. Below the menu bar, a status bar shows 'ID 18' and 'Message Ready'. A toolbar contains several buttons: 'REF', 'PRINT', 'GPIB' (highlighted in green), 'SET', 'STOP', 'II', and '>>' (highlighted in red). The main area lists functions for each button:

- REF**: Overview of all special functions with possibility to sent them to device
- PRINT**: Print the screen to a printer
- GPIB**: Start / Stop the communication to the device. Only when is button is activated it is possible to use this software with your measuring equipment. When pushed the device is cleared and set to its initial state.
- SET**: Go to Setup screen of automatic measurements and select the frequency range to be used
- STOP**: Stops directly any ongoing measurement and internal processes. Any measurements done are stored and can still be used for Excel of download.
- II**: Hold function (For usage in automatic or single measurement run) : temporarily interrupts the measurement run(button becomes green). Click it again to proceed measuring (button becomes red again)
- >>**: Starts the automatic measurement run . Button becomes green (>>) when the automatic measurement run is active. When the measurement is completed the button >> becomes red again. Then also the download to Excel will start automatically (if selected)

5.3. Progress information bar

Auto Run
2 / 21

Type
MOD_FM_MEAN

Repeat
2 / 5

Auto Run
2 / 21

Here the progress of the automatic runs can be displayed. An automatic run is a full measurement cycle for a specific frequency range (or time range). This means the several measurements can be executed in one run. E.g. the following measurements can be done for a specific frequency (range)

RX Measurement

0.010 (s)

JXL TXT ALL CLR ↺ ⇒

Input Level

☒ RF Input - Power -76.2 dBm

☒ RF Input - Level (dB) 30.9 dBμV

☒ RF Input - Level 35.48 μV

Frequency

☒ Freq. 10 Hz 145.62490 Mhz

☒ Offset 10 Hz -0.09 Khz

Modulation Level

☒ FM : Mod - 0.98 Khz

☒ FM : Mod (PK+ PK) / 2 0.84 Khz

☒ FM : Mod + 0.68 Khz

☐ AM : Mod - 1.5 %

☐ AM : Mod (PK+ PK) / 2 1.5 %

☐ AM : Mod + 1.0 %

Note : to start an automatic run for a range of frequencies, push >> At least one measurement should be selected.

Type
MOD_FM_MEAN

Repeat
2 / 5

Information about current measurement (in this case FM modulation Mod(PK+PK)/2)

It is possible to repeat a full measurement cycle. Just click on the blue number to adjust the value (default = 1, max 999 repeat cycles). This is especially useful when there is a need for multiple measurements within the same setup

5.4. Cockpit for frequency setup

Setup of threshold value **40** dB(μV) for scanning purposes (can be adjusted by clicking on blue value). Use the **+** and **-** buttons to add or subtracts a predefined step value **5** (which can be clicked upon to change its value)

Preset values for the threshold can be adjusted also (click on blue value)

Setup of frequency value **88.5000** Mhz (can be adjusted by clicking on blue value). Use the **+** and **-** buttons to add or subtracts a predefined step value **1.0000** (which can be clicked upon to change its value)

Preset values for the frequency step can be adjusted also (click on blue value)

To start the scanning, first make a choice between three scanning modes :

1. EXIT = When the threshold is exceeded the scanning stops immediately

2. HOLD = When the threshold is exceeded the scanning keep checking the channel and will proceed scanning if the measure value drops below the threshold
3. TIME = When the threshold is exceeded a maximum time period is will be waited before the scanning continues, independent on the measured level. 2.000 (s) (which can be adjusted, click on blue text)



To start the scanning, click on one of the direction buttons:



To stop click on the “green” active scanning button

During scanning the measured value is displayed in the screen for information purposes (except when the “squelch” mode is selected (ESVP) and the value is below the threshold)

☐ RF Input - Level 48.0 dBμV

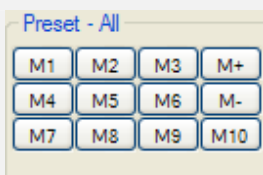


Only for ESVP : The squelch function can be activated (no audio or measurements visible when below Threshold)

RX - Frequency SQU.

or deactivated for scanning (all audio an measurements visible)

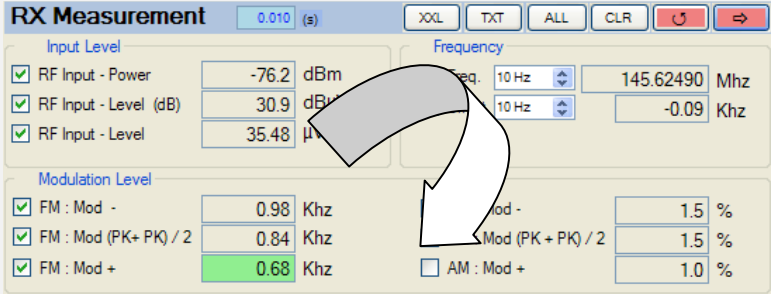
RX - Frequency SQU.



All device setting can be stored in one of the 10 memory positions. To store a setting first click on M+ (can be cancelled with M-). When the button is green click on the desired memory position (e.g. M4). Then, the green color of button (M+) disappears indicating that it has been stored.

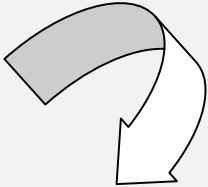
All memory positions can be viewed by the SET button.

5.5. Measurement selection area



The screenshot shows the 'RX Measurement' window with several sections: 'Input Level' (RF Input - Power, Level (dB), Level (μV)), 'Frequency' (Frequency, Offset), and 'Modulation Level' (FM: Mod -, FM: Mod (PK+ PK) / 2, FM: Mod +, AM: Mod +). Arrows point from the '0.010 (s)' timer and the 'Modulation Level' section to the explanatory text on the right.

Measurement run



0.010 (s)

XXL

TXT

ALL

CLR

100 Hz

1 Hz

Click on blue text to change the device measuring time (0.005 .. 100 s)

If a measurement has been made, it's values can be sent directly to Excel (Microsoft Excel is needed for this). This button triggers the manual download into Excel of the last measurement (run) done.

If a measurement has been made, it's values can be sent directly to a .txt file. This button triggers the download to a file of your choice. It is only possible to download the last measurement (run) done

Select all possible measurements (click it again and deactivate all measurements)

Clear all measured values

Trigger a full measurement run. When ready it restarts automatically to perform the same measurement run, taking any new device setup into account

Can be stopped by clicking again on , or push on the button.

Note : New device setting are only activated when a measurement cycle has been completed.

Trigger a single full measurement run. After is ready it stops automatically and displays all values read in the run.

For the frequency and offset several resolution can be selected (only for ESVP)

5.6. Adjust device settings, including attenuation

Settings M-FIL AFC CAL-L CAL-S **Attenuation** AMPL

Demod

- ☐ F3 : FM-Narrow
- ☒ F3 : FM-Wide
- ☐ A3J : USB
- ☐ A3J : LSB
- ☐ A3 : AM-Nar.
- ☐ A3 : AM-Wide
- ☐ A1 : 1Khz
- ☐ A0 : Zero Beat
- ☐ Off

IF - Bandwidth

- ☐ 1 Mhz
- ☒ 120 KHz
- ☐ 12 KHz
- ☐ 7.5 KHz

Function

- ☐ Two Port
- ☐ Rem. Freq.
- ☒ Gen_Off

Mode

- ☒ Average
- ☐ Peak
- ☐ CISPK
- ☐ MIL

Operating Range

- ☐ 20 dB
- ☐ 40 dB
- ☒ 60 dB

Attenuation

Mode

- ☐ Manual

RF

0 dB

10 -

IF

0 dB

10 -

☒ A- Low Noise

☐ A- Low Dist.

Select the appropriate device setting. Only when the measurements have been finished the new device settings will be sent to the device to prevent disturbing the ongoing measurements. In case of ongoing measurements this moment it is when a cycle has been completed and it restarts.



Activate or deactivate the low pass filter at input to modulation depth and FM deviation (ESVP only)



Activate or deactivate the automatic frequency control (AFC) function of the device (ESVP only)



Activates the short calibration cycle of the device (stops automatically). Green is an indication that it is still running.



Activates the long calibration cycle of the device (stops automatically). Green is an indication that it is still running.



Activates or deactivates the pre- amplifier

Attenuation AMPL

Mode

- ☒ Manual

RF

30 dB

10 -

IF

10 dB

10 -

Only in manual mode the RF attenuation and IF attenuation can be adjusted. This is done by clicking directly on its setting, or using the up and down keys.

5.7. Other measurements

Antenna Coding

Antenna Coding

- ☒ Read Socket 47 - Disable
- ☐ Read Socket 47 - uV /m
- ☐ Read Socket 47 - uA /m
- ☐ Use HUF-Z1 / HL023A1
- ☐ Use Manually Entered k-Factors

The usage of these measurements heavily depends on the presence of the antenna coding key in socket 47 (e.g. with key to set the device to field strength measurements), or the selection of the antenna (k-factors).

Only then values are reported in terms of

- (dB) μ V/m
- dB μ A/m
- interference power (dBpW / pW)

The Unit of Measurement (UoM) will be displayed in the screen (see below), depending on the device feedback.

Normal

Input Level

<input checked="" type="checkbox"/> RF Input - Power	-46.6	dBm
<input checked="" type="checkbox"/> RF Input - Level (dB)	60.1	dB μ V
<input checked="" type="checkbox"/> RF Input - Level	1035	μ V

Field Strength

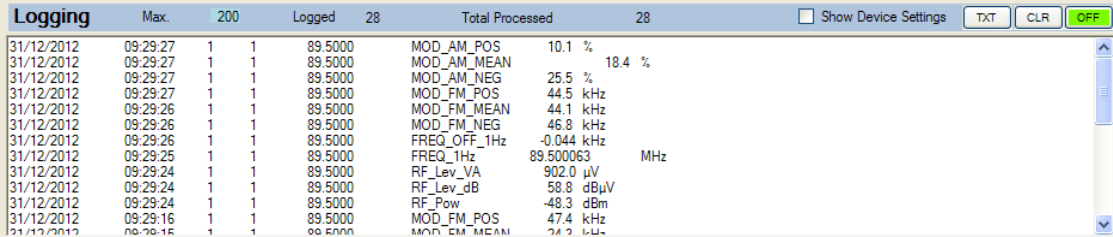
Input Level

<input checked="" type="checkbox"/> RF Input - Power	64.6	dBm
<input checked="" type="checkbox"/> RF Input - Level (dB)	64.6	dB μ V/m
<input checked="" type="checkbox"/> RF Input - Level	1718	μ V/m

Input Level

<input checked="" type="checkbox"/> RF Input - Power	-27.2	dBm
<input checked="" type="checkbox"/> RF Input - Level (dB)	28.1	dB μ A/m
<input checked="" type="checkbox"/> RF Input - Level	26.60	μ A/m

5.8. Logging Section



The logging function enables logging of all measurements. This could be measurements part of an automated measurement run, single or continuous measurement or even during scanning (indicated with "Scan")

Please note that logging may (dramatically) impact the scanning performance!

☒ Show Device Settings Will show the device settings in the log. E.g.

☒ Show Device Settings

50.9	kHz	DEM_F3_W	IF_BW_120KHz	Lev_Average	ModFilter_On	AFC_Off	Pre_Amp_Off	0.010
2.9	kHz	DEM_F3_W	IF_BW_120KHz	Lev_Average	ModFilter_On	AFC_Off	Pre_Amp_Off	0.010
89.9631	MHz	DEM_F3_W	IF_BW_120KHz	Lev_Average	ModFilter_On	AFC_Off	Pre_Amp_Off	0.010

TXT This button triggers the download of the whole logging to a file of your choice (.txt format)

CLR Clears the whole logging.

ON OFF Activates or deactivates the logging

Max. 200 Set the maximum number of logged measurements

5.9. Setup Automatic Measurements

The frequency range for an automatic run is determined by the data entered in the scanning section and device setup. The settings can be stored in a memory function.

Frequency: 87.5000 Mhz
 Scan From - To: 87.5000 108.0000
 + - 0.1000
 Exit Hold Time 2.000 (s)

To (re)view all memory setting, or to adjust the measurement from a frequency based approach to a time based approach, select the **SET** button. Any range selected here is copied directly into the scanning section to facilitate proper measurement setup.

Select "Time Steps"

Time Steps (s) Duration 3600 Step Size 60

to constantly measure a fixed frequency over a fixed time period, with fixed time steps (e.g. 1 measurement run each minute over a period of 1 hour)

Setup Automatic Measurement

Automatic Run Options

Max Steps: 999

	From	To	Step Size	Copy	UnDo	Demodulation	BandWidth	Level Type	Thresh	Oper. Range	Attenuation
<input type="radio"/> RF Band -1 (Mhz)	21.0000	21.4500	0.0010	Copy	UnDo	DEM_F3_N	IF_BW_1200z	Lev_Average	-5	Op_Range_50dB	RF+0, RF-0
<input type="radio"/> RF Band -2 (Mhz)	24.8800	24.9900	0.0010	Copy	UnDo	DEM_F3_N	IF_BW_1200z	Lev_Average	-5	Op_Range_50dB	RF+0, RF-0
<input type="radio"/> RF Band -3 (Mhz)	28.0000	29.7000	0.0010	Copy	UnDo	DEM_F3_N	IF_BW_1200z	Lev_Average	-5	Op_Range_50dB	RF+0, RF-0
<input type="radio"/> RF Band -4 (Mhz)	87.5000	108.0000	1.0000	Copy	UnDo	DEM_F3_W	IF_BW_1200z	Lev_Average	40	Op_Range_50dB	RF+0, RF-0
<input type="radio"/> RF Band -5 (Mhz)	85.5000	87.5000	0.0100	Copy	UnDo	DEM_F3_N	IF_BW_1200z	Lev_Average	-5	Op_Range_50dB	RF+0, RF-0
<input checked="" type="radio"/> RF Band -6 (Mhz)	87.5000	108.0000	0.1000	Copy	UnDo	DEM_F3_W	IF_BW_1200z	Lev_Average	40	Op_Range_50dB	RF+0, RF-0
<input type="radio"/> RF Band -7 (Mhz)	132.0000	135.0000	0.1000	Copy	UnDo	DEM_A3_N	IF_BW_1200z	Lev_Average	-5	Op_Range_50dB	RF+0, RF-0
<input type="radio"/> RF Band -8 (Mhz)	144.0000	146.0000	0.0125	Copy	UnDo	DEM_F3_N	IF_BW_1200z	Lev_Average	-10	Op_Range_50dB	RF+0, RF-0
<input type="radio"/> RF Band -9 (Mhz)	430.0000	440.0000	0.0125	Copy	UnDo	DEM_F3_N	IF_BW_1200z	Lev_Average	-10	Op_Range_50dB	RF+0, RF-0
<input type="radio"/> RF Band -10 (Mhz)	1240.0000	1300.0000	0.100	Copy	UnDo	DEM_F3_N	IF_BW_1200z	Lev_Average	-5	Op_Range_50dB	RF+0, RF-0

Time Steps (s) Duration 3600 Step Size 5

General Options

☐ Only read valid measurement Values (no 'C', 'H', 'U', or 'X')

☐ Do not show level at manual freq. change

☐ Show level at manual freq. change (dBm)

☒ Show level at manual freq. change (dBuV)

OK

Frequency: 87.5000 Mhz
 Scan From - To: 87.5000 108.0000
 + - 0.1000
 Exit Hold Time 2.000 (s)

E.g. In example below the range of RF Band 7 is copied into the scanning section,

Max Steps 999

Can be used to restrict the maximum number of runs (e.g. when step size is taken too small)

From 21.0000 To 21.4500 Step Size 0.0010

Any blue value can be adjusted by clicking on it.

RF Band -6 (Mhz)

A Frequency range can be selected.

Copy

When using the copy function the settings of the selected frequency band are copied into the band of the copy button. E.g. when band 6

is selected, you can copy the settings from band 6 into 7 by clicking on copy button in band 7. This button becomes green to indicate that it has been used.

<input checked="" type="radio"/> RF Band -6 (Mhz)	87.5000	108.0000	0.1000	Copy	UnDo
<input type="radio"/> RF Band -7 (Mhz)	87.5000	108.0000	0.1000	Copy	UnDo

UnDo

The undo function resets the last copy (which was green)

<input checked="" type="radio"/> RF Band -6 (Mhz)	87.5000	108.0000	0.1000	Copy	UnDo
<input type="radio"/> RF Band -7 (Mhz)	132.0000	135.0000	0.1000	Copy	UnDo

☐ Only read valid measurement

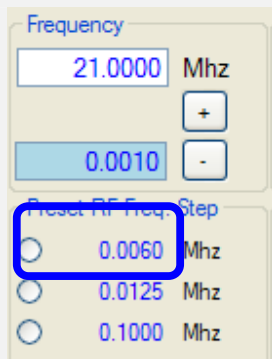
When measurements are not valid they can be excluded from the measurement automatically.

- ☐ Do not show level at manual freq. change
- ☐ Show level at manual freq. change (dBm)
- ☒ Show level at manual freq. change (dBμV)

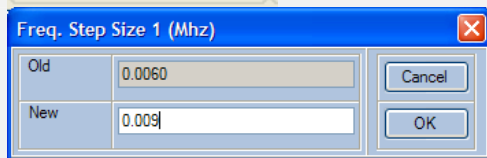
When manually adjusting the frequency (e.g. by up and down buttons in software) the device can be set in such a way that it automatically displays the measured level in dBm or dBuV (default).

5.10. Entering new values

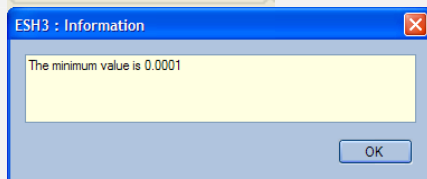
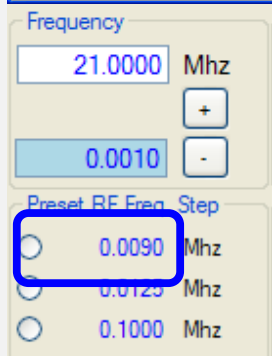
All the **blue** values can be edited. For example it is possible to change the step size and to save it into your own configuration file



Click with your cursor on the (blue) text



Enter the new value. Click on Ok. A check on maximum and minimum values is performed. If all ok the value will be updated in the screen



On error a message like here could occur.

6. GPIB Setup

GPIB_Channel
X

Channel SetUp

			Normal	At Scan
Board	<input type="text" value="0"/>	SRQ Max Retries	<input type="text" value="5"/>	<input type="text" value="1"/>
Prim. GPIB Address	<input type="text" value="18"/>	SRQ Wait Time (ms)	<input type="text" value="100"/>	<input type="text" value="100"/>
Sec. GPIB Address	<input type="text" value="0"/>	Message Delay (ms)	<input type="text" value="5"/>	
Time Out	<input type="text" value="12"/>	RX Max Char Count	<input type="text" value="20"/>	
EOT	<input type="text" value="1"/>			
EOS	<input type="text" value="13"/>	<input type="checkbox"/> Display all messages		

Board	<input type="text" value="0"/>
Prim. GPIB Address	<input type="text" value="18"/>
Sec. GPIB Address	<input type="text" value="0"/>
Time Out	<input type="text" value="12"/>
EOT	<input type="text" value="1"/>
EOS	<input type="text" value="13"/>

Adjust the cannel setting of your GPIB device. The address is according to device default specifications (primary address ESVP = 18, ESH3 = 17). See your NI GPIB card for further information

SRQ Max Retries

SRQ Wait Time (ms)

Message Delay (ms)

RX Max Char Count

☐ Display all messages

Enter the number of Service Request (SRQ) line checks to be made before proceeding with next measurement.

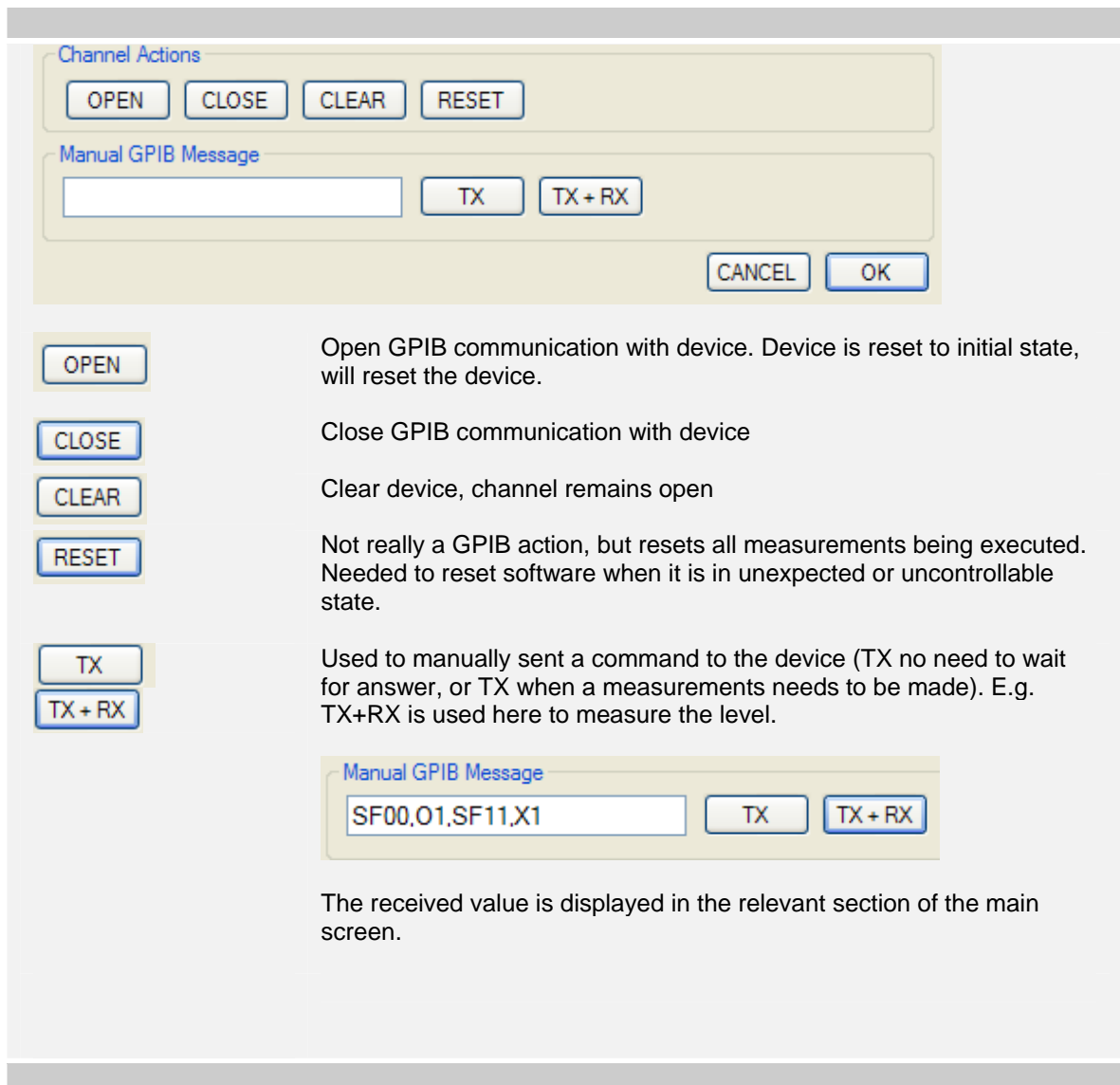
Enter here the time out (in sec.) between two SRQ calls. When chosen too small there is a risk of missing the final SRQ trigger. When taken too long, it dramatically can influence performance (especially during scanning)

Any activity on the GPIB channel will be displayed in the message bar. This can go very fast. For testing purposes it is possible to delay the messages (say to 500 ms – 1000 ms) so that they can be easily read. However, this will of course delay the measurements at hand.

Max. Limit of received characters in one string (depending on device). To be used as a safety check (do not adjust)

If selected, more information will be given in message bar (e.g. number of serial polls being executed)

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The screenshot shows a software interface for GPIB Setup. At the top is a dialog box titled "Channel Actions" with buttons for OPEN, CLOSE, CLEAR, and RESET. Below it is a "Manual GPIB Message" section with a text input field and buttons for TX and TX + RX. At the bottom right of the dialog are CANCEL and OK buttons. Below the dialog is a list of actions with their descriptions:

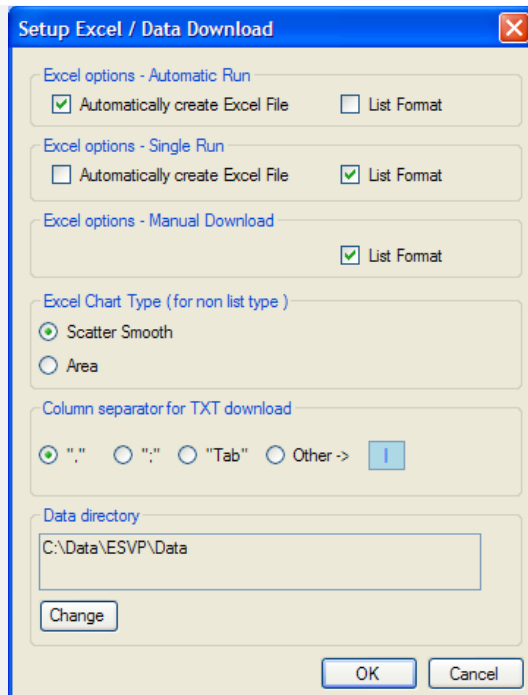
Action	Description
OPEN	Open GPIB communication with device. Device is reset to initial state, will reset the device.
CLOSE	Close GPIB communication with device
CLEAR	Clear device, channel remains open
RESET	Not really a GPIB action, but resets all measurements being executed. Needed to reset software when it is in unexpected or uncontrollable state.
TX	Used to manually sent a command to the device (TX no need to wait for answer, or TX when a measurements needs to be made). E.g. TX+RX is used here to measure the level.
TX + RX	

Below the list is another "Manual GPIB Message" section showing the text "SF00,01,SF11,X1" in the input field, with TX and TX + RX buttons.

The received value is displayed in the relevant section of the main screen.

7. Downloading Measurement & Logging Data

7.1. Download (last) measurement to Excel



Excel can be started automatically in two cases

A) After a single run (initiated by **GO** or **CONT**, when ending it) .

In case of a continuous run (currently) only the last full cycle can be downloaded(not recommended)

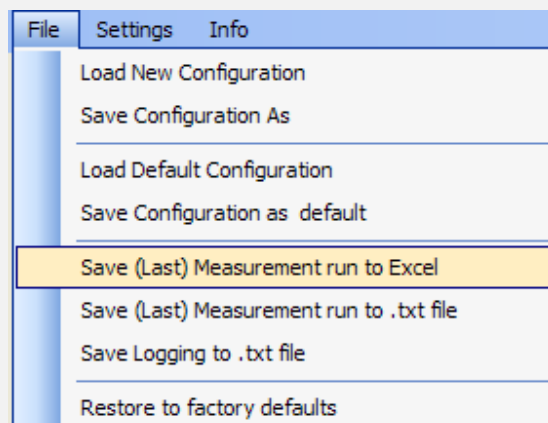
B) After a fully automatic measurement (recommended, unless you do not have Excel)

There are two formats available

1. List Format (one measurement per line)
2. Table (set of measurements per run)

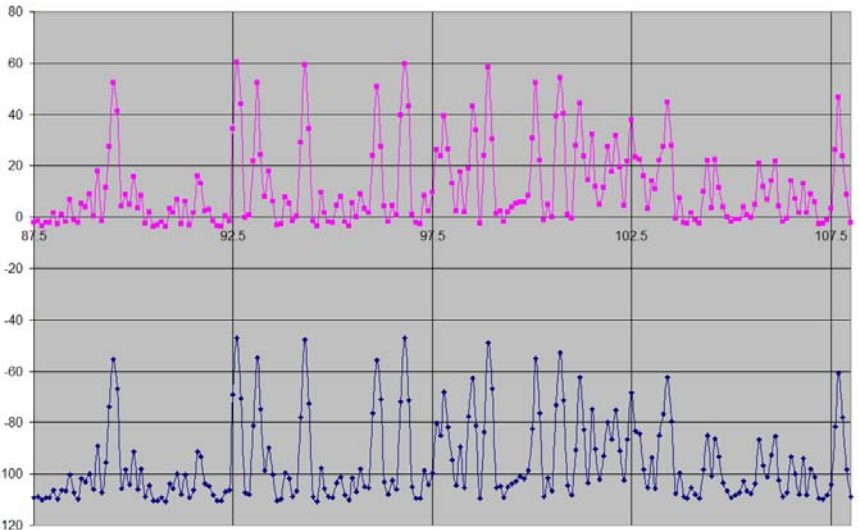
In case of a table, automatically a chart will be created (two options available)

Excel can also be started manually by clicking on (**XXL**) in the measurement section or selected from the menu bar



Only the last measurement run is downloaded into Excel. This can be a single measurement or a fully automated measurement run. Only the last measurement of a continuous measurement Can be used.

ESVP (11/1/2009) , Threshold=40dBuV , IF_BW_120Khz , DEM_F3_W , Att_Auto_LN (RF=0 , IF=0) , Op_Range_20dB , Lev_Average , Measur_Time=0.010sec.



Excel File directory

C:\Data

Change

Will change the default Excel and .txt download directory

XXL

This button in the main screen will (re)generate an Excel file (again) based on the last measurement done.

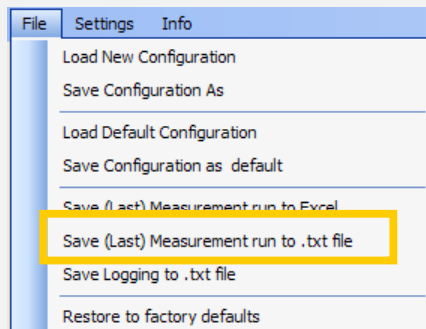
Column separator for TXT download

☒ "," ☐ ";" ☐ "Tab" ☐ Other -> |

It is possible to set the column separator when downloading the data into a txt file.


Note. The logging download function will download the log as displayed (it will not use the separators shown here)

7.2. Download (last) measurement to .txt file

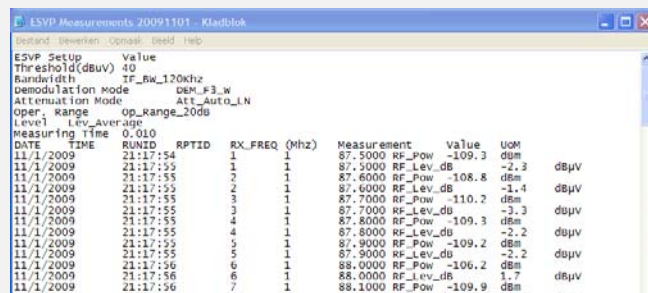


Starts the download to a user selectable .txt file.

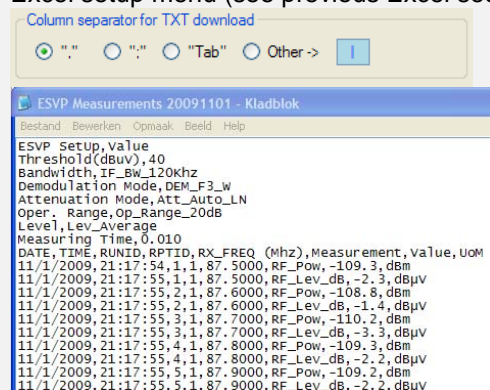


Or  from the measurement section (Section D)

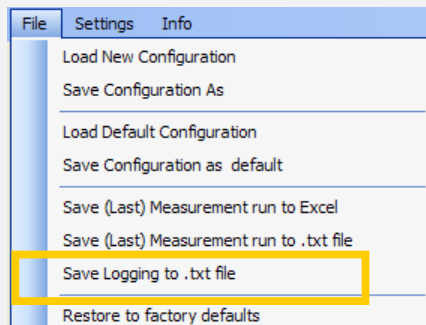
The file will be column separated, with column headers. The column separator can be manually selected from the Excel setup screen (in this case "Tab")



It is possible to adjust the column separator, with your own desired character. This is done in the Excel setup menu (see previous Excel section)



7.3. Download of logging section



Starts the download to a user selectable .txt file.



Or **TXT** from the logging section
(Section G)

Will save the logging to a user selectable .txt file. The column separator is **not used** here. The logging will be saved in the same format as displayed in the screen.

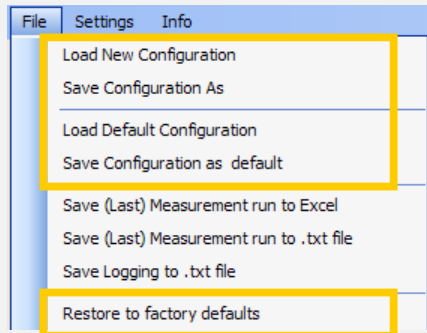
E.g.

Logging <input checked="" type="checkbox"/> Show Device Settings									
16/11/2009	08:15:52	1	1	89.9000	MOD_FM_MEAN	50.9	kHz	DEM_F3_W	IF_BW
16/11/2009	08:15:52	1	1	89.9000	FREQ_OFF_100Hz	2.9	kHz	DEM_F3_W	IF_BW
16/11/2009	08:15:52	1	1	89.9000	FREQ_100Hz	89.9031	MHz	DEM_F3_W	IF_BW
16/11/2009	08:15:52	1	1	89.9000	RF_Lev_dB	28.3	dBμV	DEM_F3_W	IF_BW
16/11/2009	08:15:52	1	1	89.9000	RF_Pow	-78.6	dBm	DEM_F3_W	IF_BW
16/11/2009	08:15:51	1	1	89.9000	MOD_FM_MEAN	52.8	kHz	DEM_F3_W	IF_BW
16/11/2009	08:15:51	1	1	89.9000	FREQ_OFF_100Hz	2.8	kHz	DEM_F3_W	IF_BW

Will be shown in the .txt file as

ESVP Log 20091116 085455 - Kladblok									
16/11/2009	08:15:52	1	1	89.9000	MOD_FM_MEAN	50.9	kHz	DEM_F3_W	
16/11/2009	08:15:52	1	1	89.9000	FREQ_OFF_100Hz	2.9	kHz	DEM_F3_W	
16/11/2009	08:15:52	1	1	89.9000	FREQ_100Hz	89.9031	MHz	DEM_F3_W	
16/11/2009	08:15:52	1	1	89.9000	RF_Lev_dB	28.3	dBμV	DEM_F3_W	
16/11/2009	08:15:52	1	1	89.9000	RF_Pow	-78.6	dBm	DEM_F3_W	
16/11/2009	08:15:51	1	1	89.9000	MOD_FM_MEAN	52.8	kHz	DEM_F3_W	
16/11/2009	08:15:51	1	1	89.9000	FREQ_OFF_100Hz	2.8	kHz	DEM_F3_W	
16/11/2009	08:15:51	1	1	89.9000	FREQ_100Hz	89.9019	MHz	DEM_F3_W	
16/11/2009	08:15:50	1	1	89.9000	RF_Lev_dB	28.3	dBμV	DEM_F3_W	
16/11/2009	08:15:50	1	1	89.9000	RF_Pow	-78.7	dBm	DEM_F3_W	
16/11/2009	08:14:11	0	0	89.9000	Scan		dBμV		
16/11/2009	08:14:11	0	0	89.8000	Scan	28.5	dBμV		
16/11/2009	08:14:11	0	0	89.7000	Scan	28.4	dBμV		
16/11/2009	08:14:10	0	0	89.6000	Scan	38.7	dBμV		
16/11/2009	08:02:12	1	1	89.5000	MOD_FM_MEAN	52.8	kHz		
16/11/2009	08:02:11	1	1	89.5000	FREQ_OFF_100Hz	4.2	kHz		
16/11/2009	08:02:11	1	1	89.5000	FREQ_100Hz	89.4844	MHz		



8. Saving and using configuration files



All the configuration settings can be saved and opened again. Saving will be done in a user selectable directory.

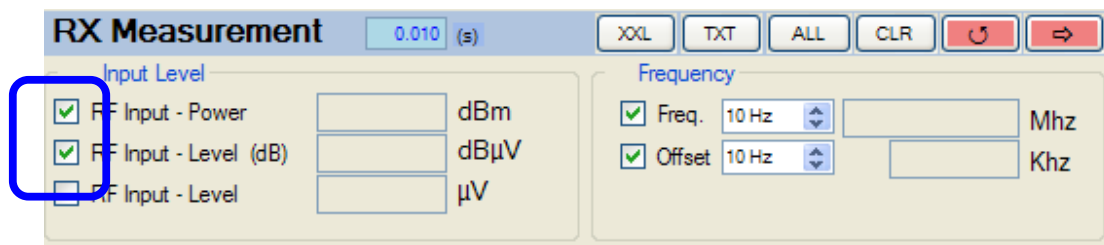
Load New Configuration	Opens a configuration file, previously saved.
Save Configuration As	Saves the configuration file, but file will not be used as default. Used to save and manage several configuration files
Load Default Configuration	Opens the default configuration file (= file used at startup)
Save Configuration as default	Saves the configuration file as default file. The file specified here will also used during startup of the tool.
Restore to factory defaults	Restores to factory defaults.

9. Appendix – Quick Start Guide

1. First of all make sure the GPIB connection to device is activated. Push on . If everything is ok it becomes green. . If it does not become green check the connection to the device, its GPIB address setting or the mandatory NI GPIB card drivers.

9.1. To make a single (set of) measurements

1. Select one or more measurements




2. Press "On" (will become green)



3. All measurements will take place. As soon as a measurement is completed its value will be shown.

The screenshot shows the 'RX Measurement' window. At the top, there's a title bar with 'RX Measurement' and a timer set to '0.010 (s)'. Below the title bar are buttons: 'XXL', 'TXT', 'ALL', 'CLR', 'CONT', and 'GO'. The main area is divided into two sections: 'Input Level' and 'Frequency'. Under 'Input Level', there are three checkboxes: 'RF Input - Power' (checked), 'RF Input - Level (dB)' (checked), and 'RF Input - Level' (unchecked). To the right of these checkboxes are three input fields: '-53.2 dBm', '53.9 dBμV', and an empty field for 'μV'. A blue rectangle highlights the '-53.2 dBm' and '53.9 dBμV' fields. Under 'Frequency', there are two checkboxes: 'Freq.' (unchecked) and 'Offset' (unchecked). To the right of these are two input fields: '100 Hz' and '100 Hz', with units 'Mhz' and 'Khz' respectively.

Note:

To continuously repeat the same measurements click on . Any device changes (frequency, demodulation mode etc) will be effective as soon as a cycle of all selected measurements has finished. This is done to prevent disturbance of any ongoing measurements.

The screenshot shows the 'RX Measurement' window with updated values. The 'RF Input - Power' is now '-48.9 dBm' and 'RF Input - Level (dB)' is '58.0 dBμV'. The '58.0 dBμV' field has a green background. The 'Freq.' and 'Offset' are now '10 Hz'.

Please note that the last measurement done will be marked with a green back color.

9.2. To make automated run of measurements

1. Select the requested measurement.


2. Make the required selection of frequency range (or Time Range). This can be done manually or using a predefined frequency range (or even a time range). For predefined ranges select the **SET** Button

3. Make the required selection of frequency range (or Time Range). E.g.

	From	To	Step Size	Copy	Undo	Demodulation	BandWidth	Level Type	Thresh.	Oper. Range	Attenuation
<input type="radio"/> RF Band -1 (Mhz)	21.0000	21.4500	0.0010	Copy	Undo	DEM_F3_N	IF_BW_12KHz	Lev_Average	40	Op_Range_60dB	Att_Auto_LN
<input type="radio"/> RF Band -2 (Mhz)	24.8900	24.9900	0.0010	Copy	Undo	DEM_F3_N	IF_BW_12KHz	Lev_Average	40	Op_Range_60dB	Att_Auto_LN
<input type="radio"/> RF Band -3 (Mhz)	28.0000	29.7000	0.0010	Copy	Undo	DEM_F3_N	IF_BW_12KHz	Lev_Average	40	Op_Range_60dB	Att_Auto_LN
<input type="radio"/> RF Band -4 (Mhz)	50.0000	52.0000	0.0125	Copy	Undo	DEM_F3_N	IF_BW_12KHz	Lev_Average	40	Op_Range_60dB	Att_Auto_LN
<input type="radio"/> RF Band -5 (Mhz)	85.5000	87.5000	0.0100	Copy	Undo	DEM_F3_N	IF_BW_12KHz	Lev_Average	40	Op_Range_60dB	Att_Auto_LN
<input checked="" type="radio"/> RF Band-6 (Mhz)	87.5000	108.0000	0.1000	Copy	Undo	DEM_F3_W	IF_BW_120KHz	Lev_Average	40	Op_Range_60dB	Att_Auto_LN
<input type="radio"/> RF Band-7 (Mhz)	132.0000	135.0000	0.1000	Copy	Undo	DEM_A3_N	IF_BW_120KHz	Lev_Average	5	Op_Range_60dB	Att_Auto_LN
<input type="radio"/> RF Band -8 (Mhz)	144.0000	146.0000	0.0125	Copy	Undo	DEM_F3_N	IF_BW_12KHz	Lev_Average	-10	Op_Range_60dB	Att_Auto_LN
<input type="radio"/> RF Band -9 (Mhz)	430.0000	431.0000	0.0125	Copy	Undo	DEM_F3_N	IF_BW_12KHz	Lev_Average	-5	Op_Range_60dB	Att_Auto_LN
<input type="radio"/> RF Band -10 (Mhz)	1240.0000	1300.0000	0.100	Copy	Undo	DEM_F3_N	IF_BW_120KHz	Lev_Average	40	Op_Range_60dB	Att_Auto_LN

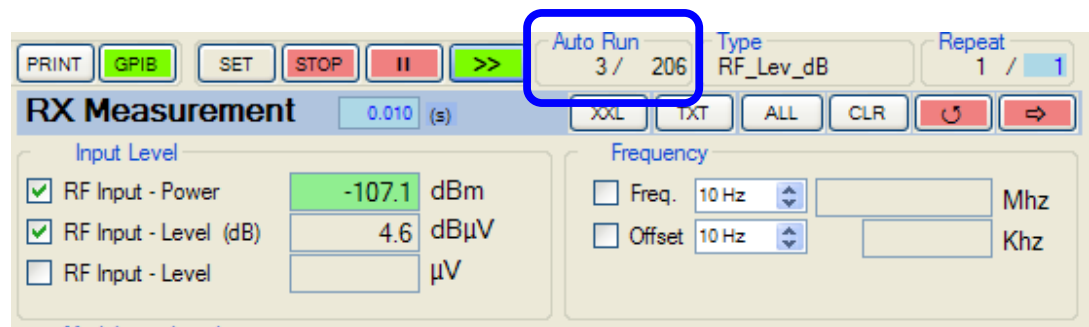
☐ Time Steps (s) Duration: 3600 Step Size: 5



General Options
☐ Only read valid measurement Values (no 'C', 'H', 'U', or 'X')
☐ Do not show level at manual freq. change
☐ Show level at manual freq. change (dBm)
☒ Show level at manual freq. change (dBuV)

4. Close the screen and press  Button

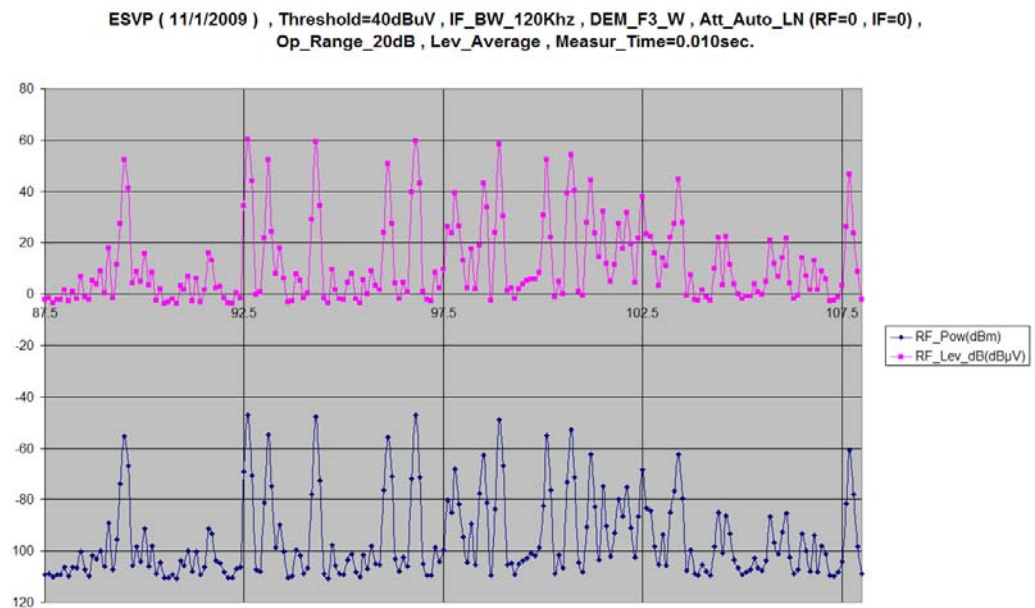


5. Now the whole measurements starts (the current measurement run is displayed in the screen as well as the total number of measurement runs planned)



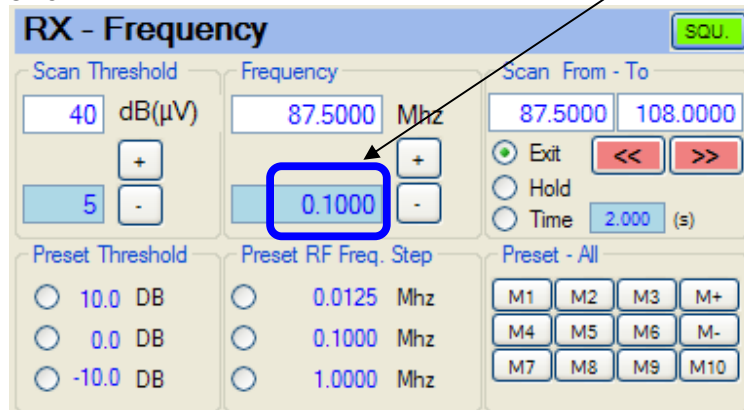
6. The measurement can be temporarily stopped and restarted by the  and  button. With the "STOP" button it will stop immediately.

7. Depending on the Excel settings, Excel will start automatically to display all the measure values in one sheet, including a graphical representation.

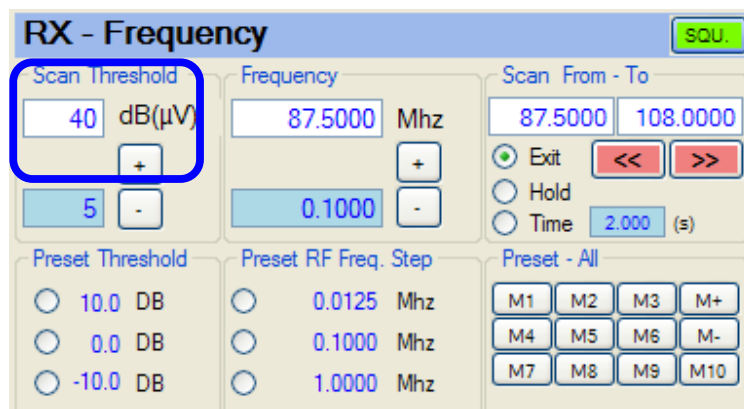


9.3. Using the scanning function

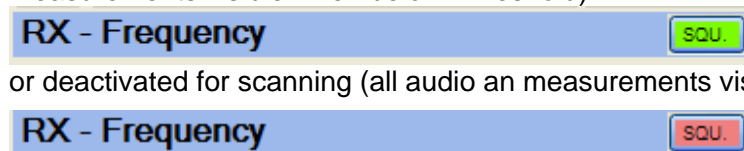
- 1 Enter or select a frequency range. Also select a proper frequency step size



- 2 Select a proper Threshold value (in dBuV). However depending on the antenna coding this might also be dBuV/m or even dBuA/m).



- 3 Only for ESVP : The squelch function can be activated (no audio or measurements visible when below Threshold)







4. To start the scanning, first make a choice between three scanning modes



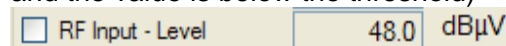
EXIT = When the threshold is exceeded the scanning stops

HOLD = When the threshold is exceeded the scanning keep checking the channel and will proceed scanning if the measure value drops below the threshold

TIME = When the threshold is exceeded a maximum time period is will be waited before the scanning continues, independent on the measured level.

5. To start the scanning, click on one of the direction buttons:  .
To stop click on the "green" active scanning button  .

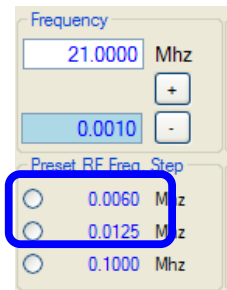
6. During scanning the measured value is displayed in the screen for information purposes (except when the squelch mode is selected (ESVP) and the value is below the threshold)



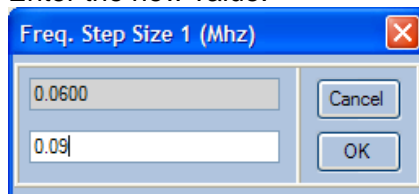
9.4. How to enter values in a box and save them?

All the **blue** values can be edited. For example it is possible to change the step size and to save it into your own configuration file

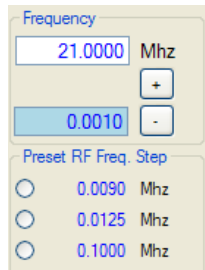
1. Click with your cursor on the (blue) text



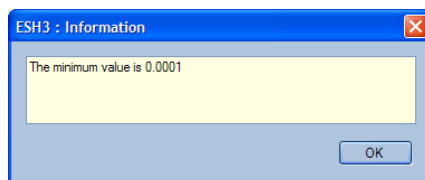
2. Enter the new value.



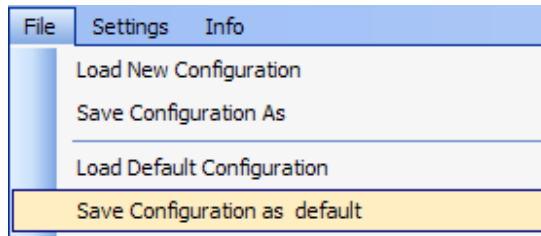
3. Click on Ok. A check on maximum and minimum values is performed. If all ok the value will be updated in the screen



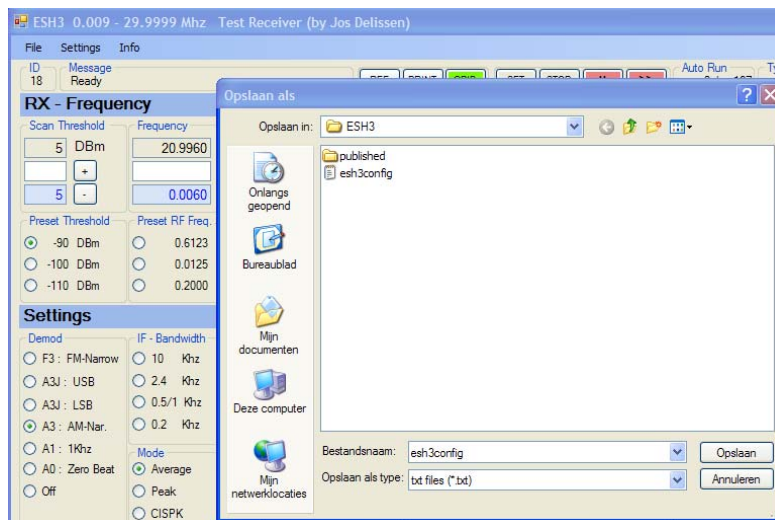
On error a message like below could occur.



4. To save your configuration. You can use the save buttons (e.g. save as your default configuration).



When using the first time you need to select an directory/filename. E.g.



The file name and directory will be remembered.